



UNITED STATES PATENT AND TRADEMARK OFFICE


UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,624	08/04/2003	Kiyoshi Kureda	241242USDCONT	9200
22830 7590 01/21/2004				
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
VBAYAKUNAR, KALLAMBELLA M				
ART UNIT		PAPER NUMBER		
1751				

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 10/632,824	Applicant(s) KURODA ET AL. 
Examiner Kallambetta Vijayakumar	Art Unit 1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any extended patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Application filed 08/04/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(c).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/797,595.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s): _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Detailed Action

- This application is a continuation of SI. No. 09/797,595 filed 03/05/2001 and now abandoned. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/797,595 filed on 03/05/2001. Claims 1-14 are currently pending with the application.
- The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
- The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892 and/or provided by the applicant on PTO-1449, they have not been considered.

Claim Rejections - 35 USC § 101
Claim Rejections - 35 USC § 112

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- Claim 14 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 provides for the use of membrane, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 14 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd. App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102
Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States
- (c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

- Claims 1 and 6 are rejected under 35 U.S.C. 102(b/a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over either Ishihara et al (Chem. Mater. 1999, 11, 2081-2088).

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Ishihara et al disclose ion conductive composition with the formula $\text{La}_{0.8}\text{Sr}_{0.2}\text{Ga}_{0.8}\text{Mg}_{0.115}\text{Co}_{0.085}\text{O}_3$ obtained by doping LSGM with Co, whose ionic conductivity was evaluated as a function of Co concentration (Abstract, Page-2083 Fig-2, Table-1). The composition meets the limitations of claims 1 and 6. All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by either Ishihara et al be insufficient to arrive at the limitations of the instant claims by the applicants, it would have been obvious to modify the ratios of the component to benefit from improved ionic conductivity and stability, because Ishihara teaches the Co doping of lattice sites in lanthanum gallate structures to attain improved solid electrolyte with good stability, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

- Claims 1-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Keppeler et al (J. Australasian Ceramic Soc. 1998, 34(1), pp 106-111) in view of Tas et al (J. Am. Ceram. Soc., 2000, 83(12), pp 2954-2960).

Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to (SEE MPEP 2131.01):

- (A) Prove the primary reference contains an "enabled disclosure; "
- (B) Explain the meaning of a term used in the primary reference; or
- (C) Show that a characteristic not disclosed in the reference is inherent.

Keppeler et al disclose the improved ionic conductivity for the Co-doped lanthanum gallate, with the formula $\text{La}_{0.8}\text{Sr}_{0.2}\text{Ga}_{0.85-x}\text{Co}_x\text{Mg}_{0.15}\text{O}_{3-\delta}$ ($x=0-0.25$), prepared by standard solid state techniques, and the elemental ratios meet the composition limitations in claims 1 and 6 (Abstract, Page 107, Figure-1). Tas et al show that the LSGM oxide prepared by solid state techniques always had a secondary phase present to an extent of 4-5 wt% in the crystal structure even after high temperature firing (Page-2959, Conclusion), and the presence of a secondary phase in the gallates of Keppeler et al would be inherent and would meet the limitations of instant claims 2-3 and 7-8. Keppeler et al show these gallates to have an average grain size of 10-20 micron with negligible porosity (Page108, Line-1), and the presence of smaller crystal grains in the particles would be inherent

All the limitations of instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by either Keppeler et al be insufficient to arrive at the limitations of the instant claims by the applicants, it would have been obvious to modify the ratios of the component to benefit from improved ionic conductivity and stability, because Keppeler et al teaches the Co doping of lattice sites in lanthanum gallate structures to attain improved solid electrolyte with good stability, and further optionally reduce the

grain size by known techniques, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

- Claims 1-11 and 13 rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fujita et al (US Patent 6,337,006).

Fujita et al teach the lanthanum gallate sensors having multiple crystal phases/compositions with an average particle size of less than 1.7 microns. The compositions of $\text{La}_{1-x}\text{Sr}_x\text{Ga}_{0.8}\text{Mg}_{0.2-y}\text{Co}_y\text{O}_3$ and the molar ratios of the components in Test Pieces 1A to 8A in Example-1/Table-1 (Col: 9-10) inherently meet the ratio limitations in the claims 1 and 6. The limitations of grain boundaries in the claims 2-3 and 7-8 would be inherently met by the mixed phase of the composition and the particle size of the grains. Fujita et al teach making the gallate composition comprising of La, Ga, Sr, Mg by calcining the precipitate, mix with alumina, press the mixture forming a body and sinter the body at 1500C for 3 hrs, would meet the limitations of the method in claim 11. The calcination temperatures/time for the first step would be inherent by virtue of making the first powder composition (Abstract, Col-8, Lines: 24-29, Col-9, Line-47 to Col-10, Line-23). All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Fujita et al be insufficient to arrive at the limitations of the instant claims by the applicants, it would have been obvious to modify the ratios of the component and/or preparative methods by choice of design to benefit from improved ionically conductive solid electrolyte with improved mechanical properties per the

teachings of Fujita et al, because Fujita et al teaches the variation of composition and the calcinations conditions for the rare-earth gallates, and with expectation of reasonable success in obviously arriving at the limitations of the instant claims.

- Claims 1-14 rejected under 35 U.S.C. 102(b/a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ishihara et al (DE 19839382) in view of Fujita et al (US Patent 6,337,006).

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

The composition of ionically conductive rare-earth gallate solid electrolytes by Ishihara et al meets all the ratio and elemental requirements in claims 1 and 6. Ishihara further teaches the gallates as a membrane for the SOFC, sensor and oxygen pump. The method of making the gallates involving the mixing of LSGM components, firing at 1000C, followed by mixing of transition metal oxide, compacting and firing the green body at 1500C would meet the method limitations in claim-11. (Abstract, Col-16, Lines: 41-57; Col-18, Examples-5; Claims 1-18) . The grain boundaries and the particle size of the crystal grains would be inherent for these gallates as shown by Fujita et al. All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Ishihara et al be insufficient to arrive at the limitations of the instant claims by the applicants, it would have been obvious to modify the

composition and/or preparative methods by choice of design to benefit from improved ionically conductive solid electrolyte with enhanced stability per the teachings of Ishihara et al, and with expectation of reasonable success in obviously arriving at the limitations of the instant claims.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

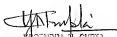
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

- Claims 1, 6, and 12 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-27 of U.S. Patent No. 6,586,127; or Claims 1-11 of US Patent 6,635,376; or Claims 1-3 of US Patent 6,287,716, or Claims 1, 8 and 16 of US Patent 6,090,500. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are drawn to the same oxide compositions and a fuel cell comprising these oxides as solid electrolytes.
-

Conclusion

- The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ishihara et al (JP 11-335164) teach the gallate ionic conductors.
- Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on M-Th, 07.30 - 17.00 hrs, Alt. Fri: 07.30-16.00 hrs.
- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.
- Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

KMV
01/08/2004


YOGENDRA K. GUPTA
SUPERVISOR, ART UNIT 1751
TECHNOLOGY CENTER 703